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October 23, 2006

VIA HAND DELIVERY

Thomas L. Morrison
Deputy Executive Director
California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833

Re: *PVC and ABS Drain, Waste and Vent Pipe*; Combined Notice of Proposed Action 2006 Annual Code Adoption Cycle, Tracks 8 & 10: Opposition to Proposed Amendment of CPC §§ 701.1.2.2, 903.1.2.2, 1101.3.1, 1101.3.3 and 1102.1.2

Dear Mr. Morrison:

The following comments are respectfully submitted on behalf of the Coalition for Safe Building Materials ("Coalition") in opposition to the proposed California Plumbing Code ("CPC") amendment that would remove the current restrictions and allow the expanded approval and use of polyvinyl chloride ("PVC") and acrylonitrile butadene styrene ("ABS") plastic drain, waste and vent ("DWV") pipe. The Coalition members include the California Pipe Trades Council, the California Professional Firefighters, the Sierra Club, the Planning and Conservation League, Communities for a Better Environment, the Consumer Federation of California and Center for Environmental Health. The environmental, consumer, public health and labor organizations that make up the Coalition represent literally millions of Californians concerned about the safety of new building materials.

The California Building Standards Commission ("CBSC" or "Commission") is currently reviewing proposed building standard code submittals as part of its 2007 update to the CPC. Included in the 2007 CPC package currently under review are regulations proposed by the Department of Housing and Community Development ("HCD") that would amend CPC sections 701.1.2.2, 903.1.2.2, 1101.3.1, 1101.3.3 and

1102.1.2 to allow the installation of PVC and ABS DWV pipe within residential structures greater than two stories in height ("the Project").

Under the current CPC regulations, HCD restricts the use of PVC and ABS DWV pipe to residential buildings no more than two stories in height. The removal of the two-story restriction is likely to increase the amount of PVC and ABS pipe installed in new residential construction and replaced in existing residences ("re-pipings") as a direct result of builder choice over commonly used cast iron, copper or steel DWV pipe.

There is substantial evidence that the expanded approval of PVC and ABS DWV pipe may result in significant public health and environmental impacts. Accordingly, the proposed regulations approving these products may not be adopted until these potential impacts have been fully disclosed, analyzed and mitigated in an environmental impact report ("EIR") as required by the California Environmental Quality Act ("CEQA").

Because there is substantial evidence that the expanded approval of PVC and ABS DWV pipe may result in significant public health and environmental impacts, reliance on a negative declaration in lieu of an EIR would not satisfy the requirements of CEQA. These potential impacts include:

- Worker exposure to toxic solvents at levels exceeding established workplace standards;
- Volatile organic compound ("VOC") air emissions, resulting in increased ozone and smog pollution;
- Increased fire risks from toxic smoke, cancer-causing dioxins and fire spread;
- Premature pipe failure, contaminating walls and livings spaces with raw sewage; and
- Increased solid waste impacts due to the replacement of commonly recycled metal DWV pipes with marginally recyclable and difficult-to-dispose PVC and ABS DWV pipes.

The proposed regulations expanding the authorized uses of PVC and ABS DWV pipe may not approved by the Commission until an EIR fulfilling the requirements of CEQA has been completed and certified. Until then, the Commission must disapprove the proposed regulations or, in the alternative, table the proposal pending further study. Adoption of these proposed regulations prior to completion of this review would violate state law.

The proposed expanded approval of PVC and ABS DWV pipe must also be denied because the Notice, Proposed Express Terms, and Initial Statement of Reasons ("ISOR") for the Project (collectively, "the 2007 CPC Adoption Notice") fail to meet the procedural requirements of the California Building Standards Law and the Administrative Procedure Act ("APA"). Health and Safety Code section 18929.1 requires the Commission and the proposing agencies to give the public adequate written notice and opportunity to comment on proposed building standards and their justification. Section 18929.1 further requires that these proposed procedures meet the intent of the APA and of Health and Safety Code section 18930 of the California Building Standards Law.

Health and Safety Code section 18930 requires that building standards be justified under the listed nine-point criteria. The 2007 CPC Adoption Notice, however, fails to provide justification under the nine-point criteria analysis or any other substantive justification for expanding the authorized use of PVC and DWV pipe. As a result, the public is prevented from reviewing and commenting on the justification for these regulatory proposals.

Furthermore, the proposed expanded approval of PVC and ABS DWV pipe would not meet at least two of the nine-point criteria: (1) the requirement that the adoption of standards be in the public interest, and (2) the requirement that the adoption of standards would not be unreasonable, arbitrary or unfair. Because the proposed expanded approval of PVC and ABS DWV pipe prior to the completion of an EIR would violate state law and would potentially result in numerous public health, safety and environmental impacts, adoption of these standards would be contrary to the public interest and unreasonable, arbitrary and unfair.

It is critical to the health and safety of the California public that the potential impacts of PVC and ABS DWV pipe be fully disclosed, evaluated and mitigated before these materials are approved for use throughout California. The proper forum for such evaluation is an EIR. Furthermore, the Commission must ensure

that the adoption process complies with the procedural requirements of the California Building Standards Law and the APA.

I. CEQA APPLIES TO THE PROPOSED EXPANDED APPROVAL OF PVC AND ABS DWV PIPE

A. Overview of CEQA

CEQA compliance prior to removing the current restrictions on PVC and ABS DWV pipe is not only prudent, but is legally required. The purpose of CEQA is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made.[1] Thus, CEQA "protects not only the environment but also informed self-government."[2] The Supreme Court has held that CEQA is "to be interpreted … to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[3]

B. CEQA Applies to the Adoption of the Proposed Building Standards

An agency action is subject to CEQA if it: (1) is a discretionary action undertaken by a public agency, and (2) may cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.[4]

The adoption of regulations is considered "discretionary" under CEQA if any application of judgment is required.[5] The courts have uniformly held that the adoption of building standards meets this definition and is subject to environmental review under CEQA. In the case *Building Code Action v. Energy Resources Conservation and Development Commission*, the court held that adoption of energy conservation regulations establishing double-glazing standards for new residential

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[1] Pub. Resources Code §§ 21063 & 21100.
[2] *Communities for a Better Environment v. Calif. Resources Agency* (2002) 103 Cal.App.4th 98, 108.
[3] *Laurel Heights Improvement Assoc. v. Regents of Univ. of Calif* (1988) 47 Cal.3d 376, 390; *Communities for a Better Environment v. Calif. Resources Agency, supra,* 103 Cal.App.4th at p. 110.
[4] Pub. Resources Code §§ 21065, 21080; Cal. Codes Regs., tit. 14 ("CEQA Guidelines") §§ 15061, 15357, 15358, 15378.
[5] *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 206 (holding that CEQA applies to the enactment of regulations).

construction was subject to CEQA since it could result in a significant impact on air quality as a result of increased glass production.[6]

The California Court of Appeal affirmed the application of CEQA to the Commission's approval of building standard regulations in the 2004 case, *Plastic Pipe and Fittings Association v. California Building Standards Commission* (*PPFA v. CBSC*).[7] The court held that the approval of new building standards is a discretionary act and that no statutory or categorical exemptions from CEQA apply to the promulgation of building standards.[8]

In reviewing whether a government action may cause a physical change in the environment, the "fair argument standard" is applied.[9] Under this standard, CEQA review occurs "whenever it can be fairly argued on the basis of substantial evidence" that the project may cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.[10]

"'Substantial evidence' . . . means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached."[11] The CEQA Guidelines define substantial evidence as including "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."[12] As a matter of law, "substantial evidence include . . . expert opinion."[13]

The substantial evidence required to make the initial determination to apply CEQA is, necessarily, minimal.[14] A reviewing court's decision as to whether an activity is a "project" need only be based on the most preliminary of investigations,

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[6] *Building Code Action v. Energy Resources Conservation and Development Commission* (1980) 102 Cal.App.3d 577.
[7] *PPFA v. CBSC* (2004) 124 Cal.App.4th 1390.
[8] *Id.* at p. 1413.
[9] *Dunn-Edwards v. Bay Area Air Quality Management District ("BAAQMD")* (1992) 9 Cal.App.4th 644, 654-656; *Castaic Lake Water Agency v. City of Santa Clarita* (1995) 41 Cal.App.4th 1257, 1264-1265.
[10] *Dunn-Edwards v. BAAQMD, supra*, 9 Cal.App.4th at p. 655.
[11] *Castaic Lake Water Agency v. City of Santa Clarita*, *supra*, 41 Cal.App.4th at p. 1264-1265.
[12] CEQA Guidelines, § 15064, subd. (f)(5).
[13] Pub. Resources Code § 21080, subd. (e)(1); CEQA Guidelines § 15064, subd. (f)(5).
[14] *See Simi Valley Recreation and Park District v. Local Agency Formation Commission* (1975) 51 Cal.App.3d 648, 663; *Davidon Homes v. City of San Jose* (1997) 54 Cal.App.4th 106, 118.

rather than based on an initial study or other environmental document. As one court observed, "[t]he existence of a project cannot depend on the outcome of the inquiry which the act contemplates only after the existence of a project is established."[15]

In the case at hand, substantial evidence that the expanded approval of PVC and ABS DWV pipe may result in reasonably foreseeable indirect physical changes in the environment is presented herein and in the attached expert comments and appendices. This evidence is discussed in detail, *supra*, in Section IV of this letter. Because the fair argument standard applies, this evidence conclusively establishes that CEQA applies regardless if other contrary evidence is presented.

C. An EIR Must Be Prepared Prior to the Adoption of the Proposed Building Standards

The evidence presented herein is more than enough to meet the minimal standard of evidence required to trigger the requirement to comply with CEQA. Moreover, this same evidence establishes a fair argument that the expanded approval of PVC and ABS DWV pipe may result in significant environmental impacts and thus requires the preparation of an EIR.

If an action is subject to CEQA, then an initial study must be prepared to determine the next required step.[16] An initial study is a preliminary analysis used to determine whether an EIR or negative declaration must be prepared.[17]

The courts have repeatedly recognized that the EIR is the "heart of CEQA."[18] CEQA requires that a public agency prepare an EIR on any activity it undertakes or approves which may have a significant impact on the environment. The EIR aids an agency in identifying, analyzing, disclosing, and, to the extent possible, avoiding a project's significant environmental effects through implementing feasible mitigation measures.[19] The EIR thus acts as an "environmental 'alarm bell' whose

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[15] *Simi Valley Recreation and Park District v. Local Agency Formation Commission, supra,* 51 Cal.App.3d at p. 663.
[16] CEQA Guidelines § 15063.
[17] CEQA Guidelines §§ 15063, 15365.
[18] *The Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 926.
[19] Pub. Resources Code § 21002.1, subd. (a); CEQA Guidelines § 15002, subd. (a), (f).

purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return."[20]

In certain limited circumstances, a negative declaration may be prepared instead of an EIR. A negative declaration is permitted when, based upon the initial study, a lead agency determines that a project "would not have a significant effect on the environment."[21] However, such a determination may be made only if "[t]here is no substantial evidence in light of the whole record before the lead agency" that such an impact may occur.[22]

When determining if an EIR must be prepared, the fair argument standard applies. The fair argument standard is a "low threshold" test for requiring the preparation of an EIR.[23] A public agency must prepare an EIR whenever substantial evidence supports a fair argument that a proposed project "may have a significant effect on the environment."[24] Significant effect on the environment "means a substantial, or potentially substantial, adverse change in the environment."[25]

If the record contains substantial evidence supporting a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR, even though it may also be presented with other contrary evidence that the project will not have a significant effect.[26] CEQA places the burden of environmental investigation on government agencies and project proponents rather than the public.[27] As a result, an agency is not "allowed to hide behind its own failure to gather relevant data."[28] "If the lead agency has failed to study an area of possible environmental impact, a fair argument may be based on the limited facts in

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[20] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1220.
[21] *Id.*; Pub. Resources Code § 21080, subd. (c).
[22] *Id.*
[23] *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 928.
[24] *Id.* at p. 927; Pub. Resources Code §§ 21100, 21151, 21080.
[25] Pub. Resources Code § 21068; *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.
[26] Pub. Resources Code § 21151, subd. (a); *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.
[27] *Id.*
[28] *Gentry v. City of Murietta* (1995) 36 Cal.App.4th 1359, 1378-1379, citing *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.

the record. Deficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences."[29]

In the case at hand, the record contains extensive evidence, including the attached expert comments and appendices, that establish that the expanded approval of PVC and ABS pipe may have a significant impact on the environment. Accordingly, preparation of an EIR is required prior to approval of these products.

II. HCD'S PRIOR DETERMINATION THAT EXPANDED APPROVAL OF ABS AND PVC DWV PIPE REQUIRES THE PREPARATION OF AN EIR BARS HCD FROM NOW HOLDING THAT AN EIR IS NOT REQUIRED

HCD previously determined in a 1982 Initial Study that the expanded approval of ABS and PVC DWV pipe for use in buildings greater than two stories in height would potentially result in numerous significant effects on the environment and would require the preparation of an EIR.[30] Furthermore, HCD initiated an EIR process to consider the impact of expanded approval of ABS and PVC DWV pipe, only to abandon this process prior to completion of a final certified document.[31]

HCD now proposes substantially identical provisions expanding the approval of ABS and PVC DWV pipe. The 1982 determination that an EIR is required prior to approval of this proposed regulatory change still requires HCD to prepare an EIR on this Project.

HCD may not now *unring the bell* of its previous determination in the 1982 Initial Study that an EIR is necessary. Such procedural machinations have been held improper. An agency may not conclude that a project may have significant impacts and then, when such admission is no longer convenient, simply change its conclusion to better suit its needs.[32]

The court in the case *Stanislaus Audubon Society, Inc. v. County of Stanislaus* rejected a county's argument that a revised initial study prepared by the

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[29] *Id.*
[30] HCD, Plastic Pipe Initial Study (1982) [Appendix 1].
[31] See Appendices 13-16.
[32] *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 154.

county which contradicted the findings of the first initial study had "relegated the first initial study to oblivion."[33] The court stated, "We analogize such an untenable position to the unringing of a bell. The first initial study is part of the record. The fact that a revised initial study was later prepared does not make the first initial study any less a record entry nor does it diminish its significance...."[34]

Here, the Initial Study prepared by HCD in 1982 examined the evidence before it and concluded that the expanded approval of ABS and PVC DWV pipe might have numerous, significant effects on the environment including: worker exposure to toxic solvents; increased air emissions; and increased fire hazards.[35] Based upon these findings, the Initial Study held that an EIR was required prior to the expanded approval of ABS and PVC DWV pipe.[36] A draft EIR based upon this Initial Study was prepared in 1989, but was never completed.

HCD's 1982 Initial Study creates a "fair argument" that the expanded approval of ABS and PVC DWV pipe may have significant impacts, even if HCD's current staff now make findings to the contrary.[37] Under the court's holding in *Stanislaus Audubon Society, Inc. v. County of Stanislaus*, these prior determinations are determinative and require the preparation of an EIR.

III. SUBSTANTIAL EVIDENCE ESTABLISHES A FAIR ARGUMENT THAT THE EXPANDED APPROVAL OF PVC AND ABS MAY RESULT IN SIGNIFICANT ENVIRONMENTAL IMPACTS AND THUS REQUIRES THE PREPARATION OF AN EIR

The evidence presented herein includes substantial evidence that the expanded approval of PVC and ABS DWV pipe may result in: (1) increased worker exposure to toxic solvents; (2) increased air emissions; (3) increased fire hazards; (4) premature pipe failure; and (5) solid waste impacts.

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[33] *Id.*
[34] *Id.*
[35] HCD, Plastic Pipe Initial Study (1982) [Appendix 1].
[36] The 1982 Initial Study also examined the proposed statewide approval of CPVC and PE plastic pipe.
[37] See *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th 154; *Gentry v. Murietta, supra,* 36 Cal.App.4th 1359 (petitioner may rely on statements made in initial study to establish fair argument, even in the face of contradictory evidence).

Evidence of these potential impacts includes the comments of chemist and plastic pipe expert, Thomas Reid. Mr. Reid, president of Thomas Reid Associates, is eminently qualified to review and comment on the potential environmental impacts of plastic pipe. Mr. Reid received his training in chemical engineering at Yale University and his training in biological sciences at Stanford. He has prepared environmental studies for almost 30 years and he has studied the chemistry and the associated environmental impacts of plastic plumbing for over 20 years. He also has over 20 years of experience providing expert testimony to agencies on building materials and building standards issues. Mr. Reid's curriculum vita is attached as Exhibit C.

California courts have recognized Mr. Reid's expertise on DWV plastic pipe and other plumbing materials for more than a decade. In the 1994 case, *ABS Institute v. City of Lancaster*, the Court of Appeal recognized Mr. Reid as an expert on ABS DWV pipe.[38] Based upon Mr. Reid's testimony that ABS pipe is extremely flammable, is susceptible to mechanical failure, contributes to air quality problems and is difficult to recycle or dispose, the court upheld the City of Lancaster's ban of this material.

Most recently, the Court of Appeal in the *PPFA v. CBSC* case recognized Mr. Reid as a qualified expert on the potential dangers of plastic plumbing pipe, including the potential for mechanical failure and fire hazards. (*PPFA v. CBSC, supra,* 124 Cal.App.4th at p. 1407.) The court held that "there is no reasonable question that Mr. Reid is qualified to state his opinion on these subjects." (*Id.*)

Mr. Reid's comment letter is attached as Exhibit A. Mr. Reid's letter is incorporated by reference and hereby made a part of the Coalition's comments.

Evidence of these potential impacts also includes the expert comments of air quality expert, Dr. Petra Pless. Dr. Pless received her Doctorate in Environmental Science and Engineering from the University of California, Los Angeles in 2001. Dr. Pless has over ten years of experience preparing or reviewing air quality analyses for EIRs. Her curriculum vita is attached as Exhibit D.

Dr. Pless presents a detailed calculation of the VOC emissions that will result from Project approval. Her comment letter is attached as Exhibit B. The comments of Dr. Pless are incorporated by reference and hereby made a part of the Coalition's comments.

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[38] *ABS Institute v. City of Lancaster* (1994) 24 Cal.App.4th 285, 290.

These comments also reference a number of additional supporting technical documents, reports and other evidence that are attached hereto as appendices. These supporting exhibits are also incorporated by reference and hereby made a part of the comments of the Coalition.

In addition, we incorporate by reference the comments and accompanying appendices submitted by the Coalition to the Commission and HCD on the proposed approval of PEX and PEX-AL-PEX plastic potable water pipe and the proposed expanded approval of chlorinated polyvinyl chloride ("CPVC") potable water pipe.[39] These comments and appendices have been submitted to the Commission under separate cover.

A. Worker Health and Safety Impacts

A 1989 Department of Health Services ("DHS") study concluded that the cumulative use of CPVC, PVC and ABS solvents exposes workers to harmful chemicals such as tetrahydrofuran ("THF"), methyl ethyl ketone ("MEK"), cyclohexanone ("CHX") and acetone ("ACE") at levels exceeding established workplace standards.[40] HCD commissioned this study as part of its preparation of the abandoned 1989 EIR on the proposed expanded approval of CPVC, PVC and ABS. At HCD's request, DHS examined worker exposure to the chemicals in the solvents used to join the pipes and concluded that workers installing CPVC pipe regularly suffered significant exposure to toxic chemicals in excess of the legal exposure limits for those chemicals.[41] The study found that chemicals such as THF, CHX, ACE and MEK enter the bloodstream of workers through vapors, solvent skin contact and through permeation of gloves and clothes.

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[39] These comments include: (1) the September 14, 2006 "Comments of Coalition for Safe Building Materials on the Draft Environmental Impact Report for Adoption of Regulations Permitting Statewide Residential Use of Chlorinated Polyvinyl Chloride (CPVC) Plastic Plumbing Pipe Without First Making a Finding of Potential Premature Metallic Pipe Failure Due to Local Water or Soil Conditions, State Clearinghouse No. 2006012044"; and (2) the August 1, 2005 "Comments of Coalition for Safe Building Materials in Opposition to the Proposed Amendment of CPVC Sections 604.1, 604.1.1, 604.11, 604.11.1, 604.11.2, 604.13, 604.13.1 and 604.13.2 to Allow the Statewide Approval of PEX and PEX-AL-PEX Drinking Water Pipe."

[40] DHS, California Occupational Health Program, "Plastic Pipe Installation: Potential Health Hazards for Workers (April 1989) [Appendix 2].

[41] *Id.*

The 1989 DHS study found that workers installing PVC, ABS and CPVC pipe are exposed above legal limits to the chemicals contained in the solvents used to join these pipes – including THF, MEK, CHX and ACE.[42] The highest MEK exposures occurred during the installation of ABS DWV pipe.[43] The highest THF exposures occurred during the concurrent installation of CPVC potable water pipe and PVC DWV pipe.[44] Three of the six samples in which THF exposures exceeded the short-term exposure limits were for workers installing PVC DWV pipe.[45] Urine monitoring provided strong evidence that dermal absorption contributed substantially to the overall exposure in some workers.

In 1998, Dr. Martyn Smith, Professor of Toxicology in the School of Public Health at the University of California, Berkeley, and Peggy Lopipero, M.P.H., reviewed the potential adverse health impacts for worker exposure to THF, MEK and ACE. Their report concluded that exposure to these chemicals may cause significant health effects[46] and that THF was potentially carcinogenic.[47] Smith and Lopipero also warned that CPVC solvents and cements in combination with each other or with other contaminants may cause illness where each individually would not. They concluded that MEK, ACE and possibly THF have the ability to potentiate the toxic effects of other chemicals including common contaminants of tap water.[48]

Even at levels lower than recommended exposure limits, MEK and ACE produce irritation of the eyes, nose and throat.[49] Indeed, a substantial percentage of plumbers report experiencing irritation during the installation of CPVC pipes.[50]

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[42] Since the 1989 DHS study, workplace exposure limits for Acetone have been significantly lowered, thus increasing the likelihood that exposure limits will be exceeded. (See Cal.Code Regs., tit. 8, § 5155; see also Appendix 3.) The significance of this change in exposure limits must be evaluated in an EIR prior to Project approval.
[43] DHS, California Occupational Health Program, "Plastic Pipe Installation: Potential Health Hazards for Workers (April 1989) at p. 19 [Appendix 2].
[44] *Id.*
[45] *Id.*
[46] Lopipero & Smith, Comments on the Draft Environmental Impact Report for Chlorinated Polyvinyl Chloride (CPVC) Pipe Use for Potable Water Piping in Residential Buildings (August 1998) [Appendix 5.)
[47] *Id.* at pp. 1-2, 23.
[48] *Id.* at p. 13.
[49] *Id.* at p. 23.
[50] *Id.*

DHS has stated clearly that short-term irritation is a material impairment to health.[51] Furthermore repeated irritation may contribute to chronic illness.[52]

In addition, all four solvents used in PVC and ABS cements – THF, MEK, CHX and ACE – may lead to the depression of central nervous system functions. Dizziness was the second most common symptom of ill health reported by workers participating in the 1989 DHS study, followed by headaches.[53]

Current CPC regulations require workers to use ventilation and non-latex thin gauge (4 millimeters) nitrile gloves during the installation of the CPVC potable water pipe, but do not require similar ventilation and glove use protection during the installation of PVC or ABS DWV pipe.[54]

Recent studies have shown that the ventilation and glove use requirements currently required for CPVC installation have been a failure and thus may not be relied upon to fully mitigate the cumulative impact of PVC, ABS and CPVC solvent use. Surveys and field studies have demonstrated that the ventilation and glove-use mitigation measures are not being enforced, implemented or monitored.[55] As a result, many workers installing CPVC continue to be exposed to potentially hazardous amounts of toxic chemicals as detailed in the 1989 DHS report.

In addition, Dr. James Bellows, one of the primary authors of the 1989 DHS report, recently evaluated how well the required non-latex thin gauge (4 millimeters) nitrile gloves protect workers who handle plastic pipe solvents. Dr. Bellows compared the chemicals commonly found in plastic pipe cements with studies and performance guides for 4 mil nitrile gloves. What he found was that nitrile gloves are not recommended for protection against ACE, CHX, MEK, or THF.[56] Dr. Bellows further concluded that use of these gloves may, in fact, increase exposure to these chemicals by holding contaminants in intimate contact with the skin after they have penetrated the protection.[57] The continued use of THF, MEK, CHX and Acetone in

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[51] Dr. Jim Bellows Comment Letter (August 27, 1998) at p. 25 [Appendix 6].
[52] *Id.*
[53] *Id.* p. 36.
[54] CPC, Appendix I, IS 20, § 301.0.2.2.
[55] Mark A. Capitolo Survey Report (April 20, 2005) [Appendix 9]; Declaration of Robert J. Calone re Field Investigation (April 8, 2005) [Appendix 10].
[56] Dr. Bellows Comments (Sept. 8, 2006), [Appendix 7].
[57] *Id.*

CPVC, PVC and ABS solvents thus creates a significant likelihood of worker health and safety impacts even with the use of thin-gauge nitrile gloves.

The 1989 DHS report, Dr. Bellow's 1998 and 2006 comments letters, and the 1998 Smith and Lopipero report constitute substantial evidence that the expanded statewide approval of PVC and ABS DWV pipe may, individually and cumulatively, result in serious violations of workplace chemical exposure standards that must be considered significant under CEQA. This significant impact must be disclosed and evaluated in an EIR.

B. Air Quality Impacts

Substantial evidence exists that the expanded approval of ABS and PVC DWV pipe may result in significant direct and cumulative air quality impacts. ABS and PVC are installed using solvents containing VOCs that evaporate and emit into the atmosphere during application. VOCs are ozone precursor compounds. Ozone pollution is a principal component of smog and is a major source of respiratory illness in California.

The proposed expanded approval of PVC and ABS DWV pipe will increase the statewide use of PVC and ABS cleaners and cement and, therefore, will increase emissions of VOCs. As a result, the expanded use of these solvents may have direct and cumulatively significant impacts on air quality.

The U.S. Environmental Protection Agency ("EPA") and California have both set ambient air quality standards on ozone to protect public health and welfare. These standards are exceeded throughout much of California. (See, e.g., National 1-Hour Ozone Designations.[58]) The South Coast Air Quality Management District ("SCAQMD"), where most of the multi-story residential housing growth is occurring, has the highest ozone levels in the United States.[59] Any increase in ozone in an area that significantly exceeds ozone ambient air quality standards should be considered significant.

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[58] Dr. Pless Comments (October 18, 2006), Exhibit B.

[59] Two air districts are classified as "extreme" ozone nonattainment areas -- SCAQMD and SJVAPCD. Extreme nonattainment is a formal classification under the Clean Air Act for areas that have the highest 1-hour ozone levels.

Air quality expert, Dr. Petra Pless, has prepared a preliminary evaluation of the potential air quality impacts that may result from the increased use of ABS and PVC cements. In her attached expert comments, she concludes that the large increase in ozone precursors that would be caused by the expanded approval of PVC and ABS DWV pipe in the SCAQMD and other areas that currently violate ozone standards may be significant.[60] The VOC emissions may cause and/or contribute to violations of ozone air quality standards and may exceed the SCAQMD thresholds of significance for both operational and construction-related VOC emissions.

Dr. Pless has calculated the Project's potential impacts on air quality within the SCAQMD basin. The air basin under the jurisdiction of SCAQMD is designated nonattainment for ozone pollutants under both California and National Ambient Air Quality Standards.

SCAQMD's CEQA significance threshold for operational VOC emissions is 55 lb/day. The SCAQMD's CEQA significance threshold for construction VOC emissions is 75 lb/day.[61] Dr. Pless estimates that the expanded approval of PVC and ABS DWV pipe would result in between 82 pounds and 186 pounds of VOC emissions each day, depending upon the percentage of PVC or ABS pipe installed and the number of bathrooms per unit.[62] Using a conservative estimate of 1½ baths per unit, Dr. Pless estimates that: (1) 100% PVC DWV pipe installations would result in 126 pounds per day of VOC emissions; (2) 100 % ABS DWV pipe installations would result in 82 pounds per day of VOC emissions; and (3) 50% each of PVC and ABS DWV pipe installations would result in 104 pounds per day of VOC emissions.[63] Accordingly, Project emissions would likely exceed SCAQMD's CEQA significance thresholds for both operational and construction VOC emissions.

These calculations demonstrate that the Project may result in a significant impact on air quality within the jurisdiction of SCAQMD.

Actual Project emissions are likely to be much greater than calculated by Dr. Pless.[64] Her preliminary calculations assume uniform conditions and

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[60] Dr. Pless Comments (October 18, 2006), Exhibit B.
[61] *Id*.
[62] *Id*. This calculation assumes 250 workdays per year. Dr. Pless also finds significant air quality impacts assuming 365 workdays a year. Her calculation are for average days based upon ideal conditions and thus do not reveal likely worst-case daily emissions.
[63] Dr. Pless Comments (October 18, 2006), Exhibit B.
[64] *Id*.

construction throughout the year and are based on vendor data that fails to take into account actual field conditions.[65] VOC emissions on the likely worst-case days are thus likely to be significantly higher than the average day emissions calculated by Dr. Pless.

For example, seasonal variation in construction would increase the number of units built per day, increasing maximum daily VOC emissions compared to the estimates provided by Dr. Pless, which are based on annual averages.[66] Licensed plumbers estimate that construction slows down by 20% to 30% during the rainy winter months.[67] Thus, construction during the remaining nine months of the year would be approximately 10% higher than the mathematical average. This would result in an approximate 10% increase in daily emissions above the preliminary figures calculated by Dr. Pless.[68] This factor must be considered in any EIR on this Project.

An adequate review of the Project's potential VOC emissions must also consider how the usage of these solvents under actual field conditions may significantly increase the actual Project VOC emissions. Dr. Pless estimates VOC emissions from vendor usage data.[69] This data underestimates usage due to differences between controlled laboratory conditions and field conditions. Dr. Pless identifies a number of critical differences between laboratory and field application of cements that could substantially increase field usage.

First, in the field, workers are more likely to apply excess cement because there is a large penalty for joint failure. Joints are not tested until the complete system is assembled and pressure tested. Once a system is assembled, it is very difficult to isolate leaks and very expensive to repair them, particularly if they occur after a unit is occupied. Further, it is well known that the most common cause of joint failures is failure to apply adequate amounts of cement. One plastic pipe cement manufacturer estimates that 90% of joint failures are caused by insufficient coatings of cement.[70] Therefore, applicators routinely apply excess cement to assure good seals.

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[65] Dr. Pless Comments (October 18, 2006), Exhibit B.
[66] *Id.*
[67] *Id.*
[68] *Id.*
[69] *Id.*
[70] *Id.*

Second, plumbing codes, plumbing manuals, and vendors recommend applying "liberal" and "heavy" amounts.[71] These terms mean different things to different people and can result in substantial over applications. Further, due to ease of installation compared to copper pipe soldering, PVC and ABS are sometimes installed by less skilled labor, potentially resulting in more frequent incidence of improper workmanship and excessive application.[72]

Third, high temperatures and winds can increase the amount of material required per joint. The laboratory is a controlled environment with ideal joining conditions. The temperature is usually around 70 degrees F. Field temperatures can range from subzero to 110 degrees F in desert portions of California where most of the new residential construction is occurring. Pipes are often stored outdoors in the hot sun and assembled at elevated temperatures. Extreme ambient temperatures and other conditions (e.g., winds, rain, snow) make it difficult to control application when it occurs in unprotected areas. Further, high temperatures and weather conditions, such as those that occur during the peak construction period throughout much of California, where rapid growth is occurring (e.g., Mojave Desert, Central Valley, South Coast), substantially increase losses from volatilization and hence usage per joint compared to lab conditions.

Fourth, in the field, there is always pressure to perform work quickly to minimize labor costs. Therefore, the time is virtually never taken to carefully replace the lids on the cement cans between joints, as practiced in the lab and instructed on the cans. This increases the volatilization loss per joint. Field observations indicate that the cans are typically left half open, with the dauber off to one side. More care is taken with the cement because solvent evaporation thickens the cement, but even in this case, the lid is virtually never screwed on.[73]

Fifth, accidental spills occur in the field that do not occur in the laboratory. An industrial hygiene survey found that in 14 out of 280, 15-min exposure periods (or 5% of those monitored), small spills covering less than about 3 ft^2 were observed.

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[71] *Id.*
[72] *Id.*
[73] Dr. Phyllis Fox, Comments on Draft Addendum to Final Mitigated Negative Declaration Amending Section 604.1 of California Plumbing Code (April 22, 2005) [Appendix 11].

Some workers also applied cements very liberally, sprinkling their clothes, the pipes, and nearby surfaces with drips and small splashes.[74]

Sixth, workers frequently use solvent cleaners in addition to solvent cements. Mating surfaces must be free of dirt, dust, grease, paint, water and other substances. If not removed, they "provide a serious jeopardy to the making of a successful joint." This may be done using a volatile solvent such as MEK if deposits cannot be removed with a dry paper or cotton towel or rag. E-Z Weld, manufacturer of PVC and ABS cement, states that cleaners may increase the use of solvents by an additional 33%.[75] Accordingly, it is reasonable to assume that Project VOC emissions may actually be up to 33% higher than calculated by Dr. Pless.

Finally, there is no limit on the quantity of adhesives that can be used per joint or per unit and no penalty for over-application. Thus, more product than indicated in vendor usage estimates could be used.

All of these factors would increase the release of VOCs, compared to the vendor usage data upon which Dr. Pless based her calculations. An adequate EIR on this Project must consider all of these factors in determining the scope of air quality impacts associated with the Project.

In addition, an EIR must investigate and disclose the Project's potential impact in other air basins throughout the state, as well as the Project's cumulative statewide impacts. Ozone is a regional pollutant and is the most pervasive of all the regulated criteria air pollutants. VOCs emitted in one area may not result in significant impacts in that area, yet can cause or contribute to ozone impacts in adjacent areas.[76] Thus, ozone and its precursors, VOCs and NOx, must be evaluated on both a local, project-level basis, regional, and cumulative basis. It is not reasonable to conclude that small VOC emissions in one region are not significant without considering their cumulative effect on nearby regions.[77]

The Project's cumulative air quality impacts are also significant and must be addressed in an adequate EIR. Cumulative impacts result from individually minor

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[74] DHS, California Occupational Health Program, "Plastic Pipe Installation: Potential Health Hazards for Workers (April 1989) [Appendix 2].
[75] E-Z Weld, E-Z Calc; http://members.aol.com/ezweld/ezcalc.html, accessed October 9, 2006.
[76] Dr. Pless Comments (October 18, 2006), Exhibit B.
[77] *Id.*

but collectively significant projects taking place over a period of time. Because of this potential additive effect, "the full environmental impact of a proposed project cannot be gauged in a vacuum."[78] For these reasons, CEQA requires that an EIR discuss a project's potential cumulative impacts when combined with past, present, and reasonably anticipated future projects.[79]

In particular, the Project must be looked at in context with the CPC's current restricted approval of PVC and ABS DWV pipe in buildings two stories or less. The installation of PVC and ABS DWV pipe in these buildings also results in the release of VOCs and the formation of ozone. By expanding the universe of buildings that may install PVC and ABS DWV pipe, the Project is cumulatively increasing the amount of PVC and ABS solvent installed in California on a daily basis. The Project's air quality impacts must also be examined in conjunction with the current HCD proposal to expand the approved use of CPVC potable water pipe, as discussed, *infra*, in Section V.

Substantial evidence exists that removal of the current restrictions on the use of PVC and ABS pipe may result in significant direct and cumulative air quality impacts, both statewide and within specific air basins. Such impacts must be quantified and evaluated in more detail in an EIR prior to the consideration of this Project for approval.

C. Fire Hazard Impacts

Substantial evidence exists that the expanded use of PVC and ABS DWV pipe may increase the risk of residential fires in multi-story buildings. The fire hazards associated with PVC and ABS DWV pipe include increased risk of fire spread and increased risk from toxic smoke or gas.

The plastic piping systems of greatest concern in fire rated buildings are, by far, those for DWV systems.[80] These pipes, which transport waste and gases through a building, are large in diameter, hollow and combustible.[81] If the fire

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[78] *Communities for a Better Environment v. Calif. Resources Agency*, *supra*, 103 Cal.App.4th at p. 114, fns. omitted.
[79] Pub. Resources Code § 21083, subd. (b), CEQA Guidelines §§ 15130, subd. (b) & 15355, subd. (b).
[80] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 15 [Appendix 21]; see also KBS, Specifier's Handbook [Appendix 22].
[81] KBS, Specifier's Handbook [Appendix 22].

resistance ability of their openings is not properly addressed, they create a pathway for smoke, hot gases and fire to spread through a building.[82] Plastic potable water pipe systems, on the other hand, present a comparatively reduced risk of fire spread because those pipes contain liquid that enhance fire endurance, are not vented and are generally smaller in diameter than in DWV applications.[83] Because DWV pipes are large in diameter they may create large openings between rooms when they melt or ignite, particularly where firestopping material is misapplied or fails. The venting of DWV pipe systems may also contribute to the spread of the fire.

Even where firestopping material is correctly applied, the use of PVC and ABS DWV pipe may have cumulative impacts on the spread of fire. It is extremely rare for a fire resistive assembly to be built exactly as it is found in generic form as described in the tables of the model building codes.[84] Such assemblies will have piping present and/or electrical components and possibly insulation and other components for data transmission.[85] The cumulative effect of all of these components along with the PVC and ABS DWV pipe may impact the performance of these walls if a serious fire occurs.[86]

PVC and ABS also increase the risk of residential fires because they release toxic fumes and chemicals when heated or burned.

When PVC burns, it forms hazardous substances which present acute and chronic hazards to fire fighters, building occupants, and the surrounding community. These include hydrogen chloride gas and dioxin.[87] The hydrochloric acid released by burning PVC is potentially lethal to people caught in a burning building, while dioxin's health effects are exerted more slowly and are spread across a larger population.

Hydrogen chloride is a corrosive, highly toxic gas that can burn skin on contact. When it comes into contact with the mucous lining of the respiratory tract,

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[82] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 16 [Appendix 21]
[83] *Id.*
[84] *Id.* at p. 28.
[85] *Id.*
[86] *Id.* at p. 29.
[87] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48 [Appendix 23].

it creates hydrochloric acid and can cause severe respiratory damage.[88] Exposure to a single PVC fire can cause permanent respiratory disease.[89]

PVC is often advertised as "fire resistant," meaning that a fairly high temperature is required to start it burning. However, PVC starts to smolder and release toxic fumes such as hydrochloric acid at a lower temperature, long before it ignites.[90] By the time actual combustion begins, PVC has lost over 60% of its weight in the generation of hydrochloric acid and other chemicals.[91] The toxic gases generated during this pre-combustion period are particularly dangerous as there is no flame to warn fire fighters and occupants.[92]

For this reason, some firefighter associations are working to educate the public about the hazards of PVC and are supporting municipal and state level policies to reduce PVC use.[93] The International Association of Fire Fighters points out that 165 people died in the Beverly Hills Supper Club Fire of 1977, and 85 people in the MGM Grand Hotel Fire in Las Vegas in 1980—almost all of whom, according to the firefighters, were killed by inhalation of toxic fumes and gases, not by heat, flames, or carbon dioxide. A likely culprit is the hydrochloric acid created by the decomposition of PVC used in building materials.[94]

Medical researchers have found elevated levels of long-term respiratory and other health problems in firefighters who put out fires involving large quantities of PVC and have identified hydrochloric acid – acting alone or in combination with carbon monoxide and soot – as the probable cause of the damages.[95]

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[88] *Id.*
[89] *Id.*
[90] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 24].
[91] Affidavit of Judith Schreiber before the Supreme Court of the State of New York in the matter of Resilient Floor Covering Institute v. New York State Department of Environmental Conservation (2003) [Appendix 35].
[92] *Id.*
[93] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at pp. 1, 11 [Appendix 24].
[94] International Association of Fire Fighters, AFL-CIO, CLC, "Hazardous Materials: Polyvinyl Chloride" (Washington DC, 1995); see also Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 24].
[95] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 24].

The hazards of PVC in fires have prompted action or positions by a number of expert organizations. The U.S. Military has adopted specifications to avoid PVC-jacketed cables in aircraft, space vehicles, and enclosures in which offgassing may occur in the event of fire.[96] In the United Kingdom, the Fire Brigades Union ("FBU") has stated, "The FBU is now particularly concerned about the safety of PVC based building materials that are used in the construction and fitting out of buildings when involved in fire."[97]

In addition to hydrochloric acid, PVC creates dioxins when burned. Dioxins are released into the air in the thick, choking smoke produced when PVC burns. Dioxins are also left behind in the ash and debris from a PVC fire.[98] While only small amounts of dioxin may be formed as the result of burning PVC, it is one of the most toxic substances known to science.[99] Dioxin is a known human carcinogen and has been linked to reproductive disorders, immune suppression, and endometriosis, and other diseases in laboratory animals.[100] In Germany after a fire in a kindergarten that contained substantial quantities of PVC, scientists measured dioxin levels in indoor soot at concentrations almost 300 times greater than the German government's health standard.[101]

ABS pipe also releases toxic gases when burned, including acrolein, hydrogen cyanide and styrene.[102] Like hydrogen chloride, hydrogen cyanide begins forming before combustion and is toxic at low levels.[103] ABS pipe is also significantly more flammable than PVC pipe.[104]

An EIR must be prepared to evaluate the potential risk of fire propagation and toxic smoke posed by the increased use of PVC and ABS DWV pipe. This is a

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[96] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48 [Appendix 23].
[97] *Id.*
[98] *Id.*
[99] *Id.*
[100] *Id.*
[101] *Id.* at p. 49.
[102] Richard Gann, et al., NIST Technical Note 1439, U.S. Department of Commerce, "International Study of the Sublethal Effects of Fire Smoke on Survivability and Health (SEFS): Phase I Final Report (August, 2001) at p. 110 [Appendix 25].
[103] Reid Comments (October 18, 2006) [Exhibit A].
[104] KBS, Specifier's Handbook [Appendix 22].

potentially significant adverse environmental impact that could affect the health of firefighters, building occupants, and neighbors.

D. Risk of Mechanical Failure

Substantial evidence exists that PVC and ABS pipes may prematurely fail when exposed to commonly encountered household materials. Failure of DWV systems may result in unsanitary and unsafe conditions from the release of raw sewage and vent gas. When DWV pipe breaks, the walls and living space of a dwelling are contaminated by sewage. In multi-family dwellings, the sewage could originate in another dwelling, increasing the risk of the spread of infectious diseases.

ABS DWV pipe has already experienced extensive failures, leading to numerous consumer lawsuits and class action claims for damages.[105] These failures were widespread and were not limited to one manufacturer, one extruder or even one kind of pipe. These extensive failures were blamed on a combination of factors, including the use of low-quality reprocessed resins and from chemical attack from numerous commonly encountered household chemicals.

The ABS DWV pipe that remains on the market today continues to be susceptible to failure from chemical attack on the plastic. ABS is subject to attack by most organics solvents. Common household chemicals (e.g., drain cleaners, paint thinner) or very hot liquids rapidly attack ABS. In addition, turpentine, isopropyl-alcohol, vegetable oils and candle wax all will decompose, dissolve or substantially reduce the lifetime of ABS pipe.[106] Because such materials are commonly flushed down drains in residential homes, a fair argument exists that some installations of ABS DWV pipe may prematurely fail as a result of such exposure.

The record also contains substantial evidence that PVC may be subject to premature failure when exposed to numerous common household substances, including termiticides, fungicides, WD-40, oil-based caulk and plasticized PVC (electric wire insulation).[107]

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[105] See Thompson, ABS and PB Failures in California [Appendix 26].
[106] CraftTech Industries, Inc., Chemical Resistance Guide.
[107] Reid Comments (October 18, 2006) [Exhibit A].; CMHC, Research Report on Incompatible Building Materials, p. 40 [Appendix 28]; Noveon Chemical Resistance Data [Appendix 29]; CraftTech Industries, Inc., Chemical Resistance Guide [Appendix 27].

A 2003 Canadian report states that certain types of electrical wire and cable jacketing may contain plasticizers that leach out when in contact with PVC pipe and damage the pipe.[108] Nothing in the building code, however, prohibits placement of electrical wiring adjacent to PVC DWV pipe. Furthermore, it is common to install electrical wiring adjacent to PVC DWV pipe since the same holes are often used for both plumbing and electrical service.[109]

There is a significant potential for premature failure due to incompatible materials. This impact must be reviewed and analyzed in an EIR.

E. Solid Waste Impacts

Substantial evidence exists that the expanded approval of PVC and ABS pipe may result in significant, increased solid waste disposal impacts. Currently most DWV pipe installed in multi-story residential buildings in California is with iron, copper or steel DWV pipe, materials with extremely high recycling rates. PVC and ABS pipe, in contrast, are only marginally recycled. By replacing highly recycled materials with materials that are only marginally recyclable, the Project may result in significant solid waste impacts. Additionally, both PVC and ABS contain contaminants that increase the hazards of their disposal in landfills or incinerators.

PVC is extremely difficult to recycle, is rarely recycled and is considered a "contaminant" in the plastic recycling waste stream.[110] Recent reports on PVC have stated bluntly, "there is no safe way to get rid of it, and no good way to recycle it."[111]

The multitudes of additives required to make PVC useful make large scale post-consumer recycling nearly impossible for most products and interfere with the recycling of other plastics.[112] Of an estimated 7 billion pounds of PVC thrown away in the U.S., only 18 million – barely one quarter of 1% – is recycled.[113] The

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[108] CMHC, Research Report on Incompatible Building Materials, p. 40 [Appendix 28].
[109] Declaration of John Hall [Appendix 19].
[110] See Rossi, et al., Plastic Pipe Alternatives Assessment (2/11/2005) [Appendix 32]; See also Appendices 23, 30, 31, 34, 38.
[111] Dr. Sandra Steingraber, Update on the Environmental Health Impacts of Polyvinyl Chloride (PVC) as a Building Material: Evidence from 2000-2004 (April 2, 2004) at p. 17 [Appendix 30].
[112] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1 [Appendix 31].
[113] *Id.*

American Association of Postconsumer Plastics Recyclers has declared efforts to recycle PVC a failure.[114] It further declared that it would henceforth view PVC products as unrecyclable contaminants in the municipal waste stream.[115]

A recent 2005 draft report by the San Francisco Department of the Environment examined the solid waste problem posed by various types of plastic pipe and found that PVC posed the most significant problem. The report found that PVC is hard to recycle and is considered a "contaminant" by most plastic recycling programs.[116] It also found that PVC posed disposal problems because it is the only plastic pipe on the market that has OSPAR[117] Chemicals for Priority Action (organotins, lead and possibly cadmium) in the final product itself.[118] As a result, the report recommends that PVC "be avoided" where alternatives exist.

The same San Francisco report determined that there is only a "small market" for recycled ABS, making it also a plastic of "concern" when evaluated for solid waste impacts.[119] Like PVC, ABS has highly hazardous manufacturing intermediates, including carcinogens, and is difficult to recycle.[120] As a result, it is considered only marginally better than PVC environmentally. The Danish EPA has ranked plastic from the most harmful to the least harmful. Levels 1 and 2 are the most harmful and level 5 is the least harmful. ABS was rated the second most harmful plastic, just behind PVC.[121] ABS received this rating due to the toxic intermediate compounds used to produce ABS and the difficulty in recycling ABS.[122]

The potential environmental hazards of PVC and ABS recycling must also be evaluated. Mechanical recycling of PVC and ABS can release additives, including phthalates and stabilizers, which may then be dispersed into the recycled products,

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[114] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 55 [Appendix 23].
[115] *Id.*
[116] Rossi, et al., Plastic Pipe Alternatives Assessment (2/11/2005) at pp. 3, 15 [Appendix 32].
[117] Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic ("OSPAR"). Chemicals on the OSPAR list are of high concern for water toxicity.
[118] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (2/11/2005) at p. 3 [Appendix 32].
[119] *Id.* at p. 16.
[120] Jamie Harvie, et al., PVC-Free Pipe Purchasers' Report (Nov. 1, 2002) at p. 2 [Appendix 33]..
[121] Michael Belivue, et al., PVC: Bad News Comes In 3's: The Poison Plastic, Health Hazards and the Looming Waste Crisis (December 2004) at p. 48 [Appendix 34].
[122] *Id.*

into the environment, or, if they are captured, disposed of on land or in incinerators.[123]

Moreover, because PVC is considered a "contaminant" in the plastic recycling waste stream, increased amounts of PVC waste may actually interfere with recycling of other plastics.[124] Efforts to recycle other types of plastics may be ruined by contamination with even small amounts of PVC.[125] This makes strict segregation of PVC from the plastics waste stream essential. However, such segregation is often difficult to achieve in practice.[126] The potential impact of increased PVC DWV pipe waste on the recycling of other plastics must be evaluated in an EIR and mitigated if possible.

An EIR is also required to evaluate the unique hazards associated with the ultimate disposal of PVC and ABS DWV pipe. Both PVC and ABS also present significant disposal risks when disposed in landfills or burned in waste incinerators. First, the persistence of PVC and ABS, which typically lasts for centuries in a landfill, presents a significant burden in terms of the demand for landfill space.[127] Second, the release of additives in the plastics may contaminate groundwater.[128] Third, combustion of PVC and ABS in incinerators or landfill fires may release hazardous substances into the air, including dioxins, metals and toxic gases.[129] PVC burning in landfill fires may now be the single largest source of dioxin releases to the environment.[130]

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[123] *Id.* at p. 55.
[124] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (2/11/2005) at p. 3, 15 [Appendix 32].
[125] *Id.*
[126] *Id.*
[127] See Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 56 [Appendix 23]; see also Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (2/11/2005) [Appendix 32].
[128] *Id.*
[129] *Id.*
[130] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1 [Appendix 31]; Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 56 ("PVC is the predominant source of dioxin-generating chlorine in these facilities. In municipal waste incinerators, PVC contributes at least 80 percent of the organically-bound chlorine and 50 to 67 percent of the total chlorine (organochlorines plus inorganic chloride) in the waste stream—although it makes up only about 0.5 percent of the trash stream by weight.") [Appendix 23].

Solid waste disposal is a potentially significant adverse environmental impact of the proposed expanded approval of PVC and ABS DWV pipe. This significant impact must be disclosed and evaluated in an EIR.

IV. ANALYZING THE PROPOSED EXPANDED APPROVAL OF ABS AND PVC SEPARATELY FROM THE CPVC, PEX AND PEX-AL-PEX REGULATORY AMENDMENTS IMPROPERLY PIECEMEALS THESE PROJECTS

The Project's environmental, health and safety impacts must also be evaluated in conjunction with HCD's proposed expanded approval of CPVC plastic drinking water pipe and proposed approval of PEX and PEX-AL-PEX potable water pipe. The failure to evaluate these plastic pipe proposals in a single environmental document improperly piecemeals these projects, making each proposal appear less significant.

CEQA mandates "that environmental considerations do not become submerged by chopping a large project into many little ones – each with a minimal potential impact on the environment – which cumulatively may have disastrous consequences."[131] Before undertaking a project, the lead agency must assess the environmental impacts of all reasonably foreseeable phases of a project.[132] A public agency may not segment a large project into two or more smaller projects in order to mask serious environmental consequences.

HCD has proposed adoption of regulations that would modify CPC Section 604.1 to permit statewide, unconditional use of CPVC plumbing pipe for hot and cold potable water distribution systems within residential structures. HCD prepared a Draft Environmental Impact Report ("DEIR"), dated July 2006, to evaluate the environmental impact of this proposed expanded approval of CPVC. The DEIR concluded that the proposed regulations allowing the unrestricted statewide use of CPVC would result in significant and unavoidable adverse impacts on air quality, both individually and cumulative.

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[131] *Bozung v. Local Area Formation Commission of Ventura County* (1975) 13 Cal.3d 263, 283-84; *City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1452.

[132] *Laurel Heights Improvement Assn. v. Regents of University of California, supra,* 47 Cal.3d at p. 396-97 (EIR held inadequate for failure to assess impacts of second phase of pharmacy school's occupancy of a new medical research facility).

The DEIR, however, failed to disclose or evaluate HCD's concurrent proposal to expand the approval of PVC and ABS DWV pipe. The proposed unrestricted approval of PVC and ABS DWV pipe and the proposed unrestricted approval of CPVC potable water pipe are sufficiently connected and related that their impacts must be examined together, rather than in separate documents. The unrestricted approval of PVC and ABS DWV pipe is proposed in the same regulatory package as the proposed unrestricted approval of CPVC potable water pipe. Furthermore, the proposed regulations would allow both PVC or ABS DWV pipe and CPVC potable water pipe to be installed in the same buildings at the same time.

Moreover, CPVC, PVC and ABS impacts significantly increase when considered jointly. CPVC, PVC and ABS all use similar chemical solvents as joining agents and thus jointly contribute to worker exposure to chemicals such as THF, MEK, CHX and ACE. The expanded use of CPVC, PVC and ABS solvents would also jointly contribute to VOC emissions and the violation of ozone air quality standards. Because HCD has already determined that the proposed expanded approval of CPVC may have a significant impact on air quality due to its contribution to VOC emissions, the additional VOC emissions associated with the proposed expanded approval of PVC and ABS DWV pipe would, per se, also be significant. CPVC, PVC and ABS pipe may also contribute jointly to increased fire hazards and solid waste impacts. HCD's failure to evaluate the proposed unrestricted approval of PVC and ABS DWV pipe as part of its July 2006 CPVC DEIR improperly piecemeals these related projects.

HCD further piecemeals this Project by failing to examine its proposed approval of PEX and PEX-AL-PEX in the same environmental review as its proposed expanded approvals of CPVC potable water pipe and PVC and ABS DWV pipe. HCD, CBSC and the Division of the State Architect have proposed adoption of regulations that would modify CPC Section 604.1 to permit the statewide use of PEX and PEX-AL-PEX potable water pipe.

HCD prepared an Initial Study / Negative Declaration, dated September 2006, to evaluate the environmental impact of this proposal. The Negative Declaration, however, fails to disclose or evaluate HCD's concurrent proposals to expand the approval of CPVC potable water pipe and PVC and ABS DWV pipe.

The proposals to expand approval of PEX, PEX-AL-PEX, CPVC, PVC and ABS plastic pipe are all part of the same 2007 CPC regulatory action. Moreover,

these proposals are contained in the same Express Terms, ISOR and Notice. In addition, the potential solid waste and fire impacts from the proposed approval of PEX, PEX-AL-PEX, CPVC, PVC and ABS plastic pipe all increase cumulatively when considered jointly. Dividing environmental review of these materials into three separate environmental documents thus improperly piecemeals these projects.

HCD has previously determined that the amendment of the CPC to permit the use of multiple new plastic plumbing materials required the preparation of a single, combined EIR. In 1982, HCD released an Initial Study that determined that the proposed approval of CPVC and polybutylene ("PB") plastic potable water pipe and PVC and ABS DWV pipe required the preparation of an EIR.[133] A single, draft EIR on all four of these products was prepared in 1989. (The draft EIR, however, was abandoned prior to completion – leaving a number of issues raised, but not fully addressed.)[134]

HCD now proposes to approve PEX, PEX-AL-PEX, CPVC, PVC and ABS plastic plumbing pipes all as part of the same 2007 CPC regulatory packet. HCD's failure to evaluate the proposed approval of these materials in a single, combined environmental review improperly piecemeals these projects.

CEQA prohibits such "piecemealing" since, by dividing a project up into two or more pieces each with a comparatively lessened environmental impact, it makes each phase appear less significant.[135] This is precisely the error that the HCD has committed in this case. An adequate EIR for this Project must examine the potential environmental, health and safety impacts from all of these proposed regulations.

[133] HCD, Plastic Pipe Initial Study (1982) [Appendix 1].
[134] See Appendices 13-16.
[135] *Citizens Ass'n for Sensible Devel. of Bishop Area v. Inyo (1985) 172 Cal.App.3d 151, 165-166.*

V. THE 2007 COC ADOPTION NOTICE IS PROCEDURALLY DEFECTIVE BECAUSE IT FAILS TO INCLUDE THE PROPOSING AGENCIES' JUSTIFICATION UNDER THE NINE-POINT CRITERIA OF SECTION 18930

The California Building Standards Law requires all building standards submitted to the Commission for approval to be accompanied by an analysis written by the proposing agency, which shall justify the approval in terms of the nine-point criteria listed in Health and Safety Code section 18930. The nine-point criteria required under Section 18930 to justify proposed building standards are as follows:

(1) The proposed building standards do not conflict with, overlap, or duplicate other building standards.

(2) The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.

(3) The public interest requires the adoption of the building standards.

(4) The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.

(5) The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.

(6) The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.

(7) The applicable national specifications, published standards, and model codes have been incorporated therein as provided in this part, where appropriate.

(A) If a national specification, published standard, or model code does not adequately address the goals of the state agency, a statement defining the inadequacy shall accompany the proposed building standard when submitted to the commission.

(B) If there is no national specification, published standard, or model code that is relevant to the proposed building standard, the state agency shall prepare a statement informing the commission and submit that statement with the proposed building standard.

(8) The format of the proposed building standards is consistent with that adopted by the commission.

(9) The proposed building standard, if it promotes fire and panic safety, as determined by the State Fire Marshal, has the written approval of the State Fire Marshal.

Health and Safety Code section 18929.1 requires that written notice of this nine-point justification be provided to the public for review and comment prior to its submittal to the Commission. Section 18929.1 requires that the Proposing Agencies provide for "[a]dequate public participation in the development of building standards prior to the submittal to the commission for adoption and approval." Section 18929.1 further requires "[a]dequate notice, in written form, to the public of the compiled building standards *and their justification*." (Emphasis provided.) Finally, Section 18929.1 requires the procedures for public review to "meet the intent of the Administrative Procedure Act (Chapter 5 (commencing with Section 11500) of Division 3 of Title 2 of the Government Code) *and Section 18930*." (Emphasis provided.)

Section 18929.1's requirement to provide the public written notice of the "justification" for the proposed building standards clearly refers to justification under the nine-point criteria of Section 18930. First, Section 18930's requirement that building standards be justified under the nine-point criteria is the only "justification" provided for in the California Building Standards Law. Second, Section 18921.1 requires the procedures for public review to meet the intent of Section 18930, thus underscoring that this section must be consulted when justifying proposed standards to the public.

The 2007 CPC Adoption Notice for the Project, however, fails to provide to the public written notice of HCD's justification under the nine-point criteria. Accordingly, the public has not been provided the notice and opportunity for public comment required by Section 18929.1.

This procedural defect represents a substantial failure to comply with the notice requirements of Section 18929.1 because it prevents the public from having an opportunity to review and comment on HCD's analysis of the nine-point criteria "prior to submittal to the commission for adoption and approval." Regulations that substantially fail to comply with notice requirements may be declared invalid.[136] Under the Commission's regulations, no new issues may be raised before the Commission that were not raised during the public comment period on the 2007 CPC Adoption Notice.[137] Accordingly, the failure to include the nine-point criteria justification in the 2007 CPC Adoption Notice effectively precludes the public from critically analyzing HCD's justifications for their proposed building standards.

The 2007 CPC Adoption Notice does include an ISOR as required by the APA under Government Code section 11346.2. The ISOR, however, is not equivalent to the justification under the nine-point criteria analysis required by Section 18930. The required elements of the ISOR substantially differ from the nine-point criteria listed in Section 18930. For example, unlike Section 18930, the APA does not require the ISOR to make written determinations that adoption of a proposed regulation is required by "the public interest," that adoption of a proposed regulation "is not unreasonable, arbitrary, unfair, or capricious, in whole or in part," or "that the applicable national specifications, published standards, and model codes have been incorporated . . . where appropriate."[138]

The APA does not limit the ISOR to the elements listed in Government Code section 11346.2, so there is no bar to including the nine-point criteria analysis in the Statement.[139] In other words, the ISOR contained in the 2007 CPC Adoption Notice could have been constructed to meet the intent of both the APA and Health and Safety Code section 18930, as required under Section 18929.1. Instead, the ISOR contained in the 2007 CPC Adoption Notice is limited to the bare elements required under Government Code section 11346.2 and fails to include agency justifications in terms of Section 18930 criteria. This failure violates the notice requirements of Section 18929.1. The 2007 CPC Adoption Notice must be revised and recirculated with a copy of HCD's nine-point analyses to correct this error.

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[136] See Gov. Code § 11350.
[137] Cal. Code Regs., tit. 24, part 1, §1-901, subd. (d)(4).
[138] Gov. Code § 11346.2; see also Health & Saf. Code § 18930.
[139] Gov. Code § 11346.2, subd. (b) ("statement of reasons shall include, but not be limited to, all of the following . . . .").

VI. THE PROPOSAL TO REMOVE THE RESTRICTIONS ON PVC AND ABS DWV PIPE FAILS TO MEET AT LEAST TWO OF THE NINE-POINT CRITERIA

Before the Commission may adopt a proposed building standards, it must be satisfied that the proposing agency has adequately justified adoption under the nine-point criteria analysis of Health and Safety Code section 18930. The proposal to expand the approved use of PVC and ABS DWV pipe, however, fails to meet at least two of the nine-point criteria. Accordingly, the Commission may not find that these proposed standards are justified under Section 18930 criteria.

Section 18930 requires findings under the nine-point criteria to be supported by substantial evidence. If the Commission finds a factual finding to be arbitrary or capricious or to lack substantial evidence, it shall return the standard back to the proposing agency for reexamination.[140]

In the case at hand, there is substantial evidence that expanding the approval of PVC and ABS DWV pipe, without first preparing an EIR, would be contrary to the public interest and would be unreasonable, arbitrary and unfair. Furthermore, the record lacks substantial evidence to support a contrary finding. Accordingly, the proposed expanded approval of PVC and ABS DWV pipe lacks justification under at least two elements of the nine-point criteria

A. Expanded Approval of PVC and ABS DWV Pipe Without First Preparing an EIR Would Not Be In the Public Interest

Removal of the current restrictions on the use of PVC and ABS DWV pipe without first preparing an EIR would not meet the "public interest" element of the nine-point criteria. Health and Safety Code section 18930, subdivision (3), requires Agencies to determine if the "public interest requires the adoption of the building standards." In the case at hand, the expanded approval of PVC and ABS DWV pipe without first preparing an EIR would violate CEQA. Approval of building standards in violation of state law would, in itself, be contrary to the public interest. Expanded approval of PVC and ABS DWV pipe also would be contrary to the public interest due to the numerous potential significant environmental, health, and safety impacts associated with these products that could adversely affect the public.

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[140] Health & Saf. Code § 18930, subd. (d) (1).

As discussed in detail above, it is well settled that the Commission and HCD must comply with CEQA prior to adopting new building standards that may have a significant impact on the public health, safety or the environment. Furthermore, it is well settled that compliance with CEQA is in the public interest.[141] CEQA "protects not only the environment but also informed self-government."[142] CEQA informs the public and its responsible officials of the environmental consequences of their decisions before they are made, ensuring consideration of alternatives and requiring imposition of reasonable mitigation measures.[143] Failure to comply with CEQA prior to the adoption of this proposed regulatory change would thus be contrary to the public interest in ensuring informed self-government and in protecting public health, safety and the environment.

Furthermore, substantial evidence exists that approval may result in significant environmental, health, and safety impacts that could adversely affect the public. As detailed above, the expanded approval of PVC and ABS DWV pipe may result in: (1) increased worker exposure to toxic solvents; (2) increased air emissions; (3) increased fire hazards; (4) premature pipe failure; and (5) solid waste impacts. Approval of PVC and ABS DWV pipe without full disclosure, evaluation and mitigation of these impacts would not be in the public interest and thus may not be justified under the nine-point criteria.

B. Expanded Approval of PVC and ABS DWV pipe Without First Preparing an EIR Would Be Unreasonable, Arbitrary and Unfair Because it Would Violate State Law

Health and Safety Code section 18930, subdivision (4), requires proposing agencies to justify their proposed building standards on the grounds that the proposed standard "is not unreasonable, arbitrary, unfair, or capricious, in whole or in part." In the case at hand, it is manifestly unreasonable, arbitrary and unfair to propose the adoption of building standards that violate state law. As discussed above, authorizing the expanded approval of PVC and ABS DWV pipe without first

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[141] See *Kane v. Redevelopment Agency of City of Hidden Hills* (1986) 179 Cal.App.3d 899, 905; *People By and Through Dept. of Public Works v. Bosio* (1975) 47 Cal.App.3d 495, 526; see also Pub. Resources Code § 21000.

[142] *Communities for a Better Environment v. Calif. Resources Agency, supra,* 103 Cal.App.4th at p. 108.

[143] *Id.*; Pub. Resources Code §§ 21063 & 21100.

preparing an EIR would violate CEQA. Since it would be unreasonable, arbitrary and unfair to approve building standards in a manner contrary to law, such approval may not be justified under the nine-point criteria.

Furthermore, the proposed expanded approval of PVC and ABS DWV pipe is unfair and unreasonable due to the substantial evidence of potential significant impacts associated with these materials. Approval of a building material without first requiring full disclosure, evaluation and mitigation of its potential impacts is unfair to the public. Moreover, a proposal by an agency to have a potentially hazardous building material approved without such disclosure, evaluation and mitigation is unreasonable.

VII. THE HCD'S INITIAL STATEMENT OF REASONS VIOLATES THE APA BY FAILING TO PROVIDE A RATIONALE FOR REMOVING THE CURRENT CPC RESTRICTIONS ON PVC AND ABS DWV PIPE

HCD's ISOR fails to provide a "statement of purpose" or "rationale" for removing the current CPC restrictions on PVC and ABS DWV pipe. Accordingly, the ISOR for these proposed amendments is procedurally defective. The ISOR required by the APA must include "a statement of the specific purpose" of each new or amended regulation and a "rationale for the determination" by the agency that the change is "reasonably necessary."[144]

The ISOR provided by HCD, however, fails to provide any justification for its addition to the code. Instead, HCD merely states that it had proposed to expand the approval of PVC and ABS pipe in the past, but never adopted such proposals due to its failure to comply with CEQA. Such a statement is merely a description of the proposal's procedural history, not a substantive justification for the underlying proposal.

This procedural defect is significant since it prevents the public from reviewing and commenting on HCD's rationale for expanding the approval of PVC and ABS DWV pipe. The 2007 CPC Adoption Notice must be revised and recirculated to correct this error.

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[144] Gov. Code § 11346.2, subd. (b)(1).

VIII. IN ADDITION TO THE HEALTH AND SAFETY AND ENVIRONMENTAL RISKS POSED BY PVC AND ABS DWV PIPE, APPROVAL OF THE PIPE WOULD RESULT IN LITTLE TO NO SHORT-TERM SAVINGS AND POTENTIALLY GREATER LONG-TERM COSTS TO CONSUMERS

Dr. William T. Dickens extensively analyzed the economic ramifications of plastic pipe approval in a 1989 study. In his report, Dr. Dickens concluded that any savings from the use of plastic piping would not be passed on to homebuyers.[145]

At the time of his study, Dr. Dickens was a professor of economics at the University of California, Berkeley, and is now a resident scholar in economic studies at the Brookings Institution. He received his Ph.D. in economics from M.I.T. in 1981, has been a Research Associate of the National Bureau of Economic Research since 1983 and serves as a reviewer for the National Science Foundation and several other granting agencies and for all the major economic journals.[146] He is also a former member of the President's Council of Economic Advisors.

Dr. Dickens explained that under standard economic theory, any plumbing system cost savings would not be passed on to homebuyers or renters. Since the supply of housing is limited, price is not determined by the cost of construction, but land prices and the demand for housing.[147] In other words, the price of a house depends on land costs and what people will pay for it and not on what it cost to build. Dr. Dickens also concluded that, in the long run, the shorter lifespan of plastic pipe versus copper pipe results in higher replacement costs for consumers and higher total costs.[148] Dr. Dicken's comments remain even more relevant today with the skyrocketing price of real estate outpacing any increases in the actual cost of construction.

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[145] Dr. William Dickens. Costs of Plastic Pipe Not Considered or Inadequately Analyzed in the Draft Environmental Impact Report on Plastic Plumbing Pipe [Appendix 39].
[146] Curriculum Vitae of Dr. William Dickens [Appendix 33.]
[147] Dr. William Dickens. Costs of Plastic Pipe Not Considered or Inadequately Analyzed in the Draft Environmental Impact Report on Plastic Plumbing Pipe [Appendix 39].
[148] *Id.*

IX. CONCLUSION

The Coalition of Safe Building Materials respectfully requests that the Commission disapprove these proposed amendments or, in the alternative, require further study of the proposals prior to adoption. Substantial evidence exists that the expanded use of PVC and ABS DWV pipe may result in significant health, safety and environmental impacts. As a result, state law requires the preparation of an EIR prior to adoption of these proposed regulations. To date, environmental review of proposed expanded approval of PVC and ABS DWV pipe has only just been initiated. Adoption of these proposed regulations prior to completion of this review would violate state law.

Furthermore, adoption of these regulations is not justified under the California Building Standards Law. The California Building Standards Law requires that building standards be justified in terms of the nine-point criteria listed in Health and Safety Code section 18930. Among these criteria are the requirements that adoption of the proposed standards be in the "public interest" and not be "unreasonable, arbitrary, unfair, or capricious." Because the safety and reliability of PVC and ABS DWV pipe has not been sufficiently demonstrated or evaluated, approval of the proposed HCD amendments would not be in the public interest. Moreover, approval of the expanded use of PVC and ABS DWV pipe would be unreasonable, unfair and contrary to the public interest since it would violate the statutory requirements of CEQA.

Sincerely,

Thomas A. Enslow

TAE:cnh
Attachments